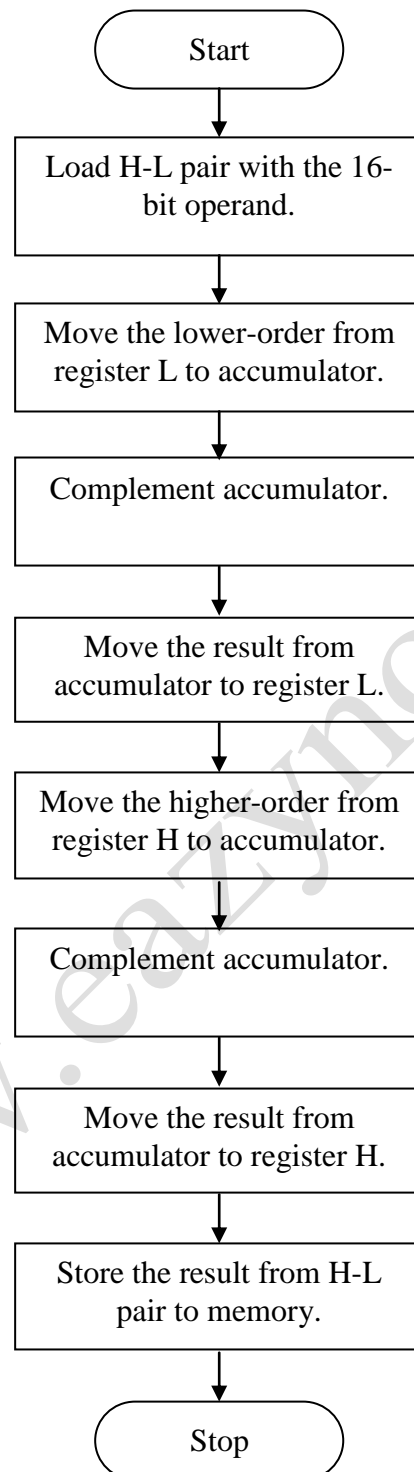


Program 3: 1's complement of 16-bit number.**Flowchart:**

Program:

Address	Mnemonics	Operand	Opcode	Remarks
2000	LHLD	3000H	2A	Load H-L pair with operand from 3000H.
2001			00	Lower-order of 3000H.
2002			30	Higher-order of 3000H.
2003	MOV	A, L	7D	Move the lower-order from reg. L to reg. A.
2004	CMA		2F	Complement accumulator.
2005	MOV	L, A	6F	Move the result from reg. A to reg. L.
2006	MOV	A, H	7C	Move the higher-order from reg. H to reg. A.
2007	CMA		2F	Complement accumulator.
2008	MOV	H, A	67	Move the result from reg. A to reg. H.
2009	SHLD	3002H	22	Store the result at address 3002H.
200A			02	Lower-order of 3002H.
200B			30	Higher-order of 3002H.
200C	HLT		76	Halt.

Explanation:

- This program finds the 1's complement of 16-bit number stored in memory 3000H-3001H.
- There is no direct way to find 1's complement of 16-bit number. Therefore, this can be accomplished by finding the 1's complement of two 8-bit numbers.
- Let us assume that the operand stored at memory locations 3000H-3001H is 45H-6AH.
- The operand is loaded into H-L pair from memory locations 3000H-3001H.
- The lower-order is moved from register L to accumulator.
- Its complement is found by using CMA instruction.
- The result obtained is moved back to register L.
- Then, the higher-order is moved from register H to accumulator.
- Its complement is found by using CMA instruction.
- The result obtained is moved back to register H.
- Now, the final result is in H-L pair.
- The result is stored from H-L pair to memory locations 3002H-3003H.

Output:**Before Execution:**

3000H: 45H
3001H: 6AH

After Execution:

3002H: BAH
3003H: 95H